

The book is divided into two parts. The first part, consisting of ten chapters, is devoted to the subject of country roads, and the second part, also of ten chapters, to street pavements. As the author states in his preface, the present edition has been thoroughly revised and entirely re-written. Five chapters of minor importance have been omitted to allow for an equal number of new ones, and attention has been given to materials and forms of construction that affect the quality and cost of the road and pavement.

The chapter headings are as follows: Country Roads, Part I.—Road Economics and Road Administration; Road Location; Earth Roads; Sand and Sand-Clay Roads; Gravel Roads; Waterbound Macadam Roads; Portland Cement Concrete Roads; Bituminous Road Materials; Bituminous Surfaces for Roads; Bituminous Macadam and Bituminous Concrete Roads.

Street Pavements, Part II.—Pavement Economics and Pavement Administration; Street Design; Street Drainage; Curbs and Gutters; Pavement Foundations; Asphalt Pavements; Brick Pavements; Stone-Block Pavements; Wood-Block Pavements; Selecting the Best Pavement.

The subject of curves on country highways is very clearly defined in the chapter on road location, as also are location and re-location.

The chapter on cement concrete roads is most complete in its description of this type of road, thirty-nine pages being devoted to the subject. The advancement of such a surface has been rapid, the square yardage laid in the United States at the end of 1916 being forty-eight times as great as that laid at the end of 1909.

The eighth chapter deals at length with the subject of bituminous road materials, an added feature to the first edition. Chapters nine and ten are devoted to bituminous surfaces and bituminous macadam and concrete roads. These surfaces are thoroughly digested and are up-to-date in every detail. During the past ten years successful experiments have been carried out with both asphalt and tar products.

The subject of asphalt pavements dealt with in chapter sixteen has been much revised and enlarged to take care of the development made in the various types of this class of pavement. The various types, including asphaltic concrete, stone-filled sheet asphalt, Topeka mixture and several patent mixtures are all thoroughly discussed. Tables are given showing the standard gradings of the mineral aggregate in these pavements, together with recent costs of constructing and maintaining same.

In chapter fifteen, dealing with the subject of pavement foundations, valuable suggestions are to be found, with the addition of several pages on the construction of street railway tracks. Chapter seventeen discusses all the essential features of brick pavements and a valuable revision of the subject is contained therein, including the wire cut-lug hillside block. Special information concerning stone and wood-block pavements is to be found in the chapters relating to these pavements. The tables showing the cost of constructing these pavements are very explicit and the illustrations are instructive. Chapter twenty deals with the subject of selecting the best pavement and contains data on the solution of the problem.

The book is intended rather for the road engineer and the inspector than for the contractor. The style throughout is simple and practical, and the illustrations make the meaning abundantly clear. It would be impossible in a review to give many details of the contents of this book; it must suffice to say of the present edition that the revision makes it even better than its predecessors and that it has been most carefully and concisely written.

EVAPORATING, CONDENSING AND COOLING APPARATUS

Reviewed by A. S. L. Barnes

Hydro-Electric Power Commission of Ontario, Toronto

By E. Hansbrand, translated by A. C. Wright, M.A., D.Sc. Published by Scott, Greenwood & Son, London. Second English edition, 1916. 401 pages, 76 tables, 21 figures, $5\frac{1}{2} \times 8\frac{3}{4}$ ins., cloth. Price, \$3.00 net.

The first German edition of this book was published in 1899 and was translated by Mr. Wright in 1902; the present volume is a translation of the second German edition of 1900.

Some errors which previously appeared have been corrected and conversion diagrams have been added for changing metric units into British ones.

The German author, in his preface, says: "The constant motive in writing this treatise has been the desire to provide as complete and reliable assistance as possible for the solution of the problems of the construction and working of apparatus for evaporating, condensing and cooling.

It would appear that a good attempt has been made to realize this object.

The earlier chapters discuss the fundamental principles governing heat transmission from solid to liquid and vice versa, and formulæ for these are developed in a clear manner.

Practical problems are dealt with later on and as a help to the reader very numerous tables are provided giving the values of many formulæ for varying conditions. Some of the subjects included are: Evaporation by means of hot liquids, multiple effect evaporations, the diameter of pipes for steam, alcohol vapor and air, condensers, the cooling of liquids.

For the engineer possessing a moderate knowledge of mathematics, engaged in designing such plant as is dealt with, this book should be of considerable use.

MATHEMATICS FOR ENGINEERS—PART I.

Reviewed by A. S. L. Barnes

Hydro-Electric Power Commission of Ontario, Toronto

By W. N. Rose, B.Sc. Published by Chapman & Hall, Limited, London, 1918. 510 pages, 11 tables, 257 figures, $5\frac{1}{2} \times 8\frac{3}{4}$ ins., cloth. Price, \$2.25 net.

This book is one of the "D.U." or "directly useful" technical series of which a former work, "Arithmetic for Engineers," was reviewed in these pages some little time ago.

The author states in his preface that "an endeavor has been made to produce a treatise so thorough and so complete that it shall embrace all the mathematical work needed by engineers in their practice and by students in all branches of engineering science."

The field as outlined above being so extensive, the work has been divided into two volumes. Part I. deals with the fundamental rules and processes of algebra, plane trigonometry, mensuration and graphs; Part II. will take up the calculus and its applications, etc.

This book is very carefully graded and takes the reader step by step through each section, and if the reader finds that any point has not been thoroughly grasped, a revision should soon set this right as the explanations are clearly given and numerous examples worked out. The principle of the book is evidently to plunge into practical applica-